

**Science Strand 1  
Inquiry Process  
Expanded Benchmarks**

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**Students at these standards levels know and are able to do the following by the end of the school year:**

<b>Grade</b>	<b>Standard</b>	<b>Essence</b>	<b>Most Complex</b>	<b>More Complex</b>	<b>Less Complex</b>
<b>4</b>	C2-PO1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.	Use safe and appropriate procedures.	Demonstrate safe behavior and appropriate procedures to set up an experiment by sequentially following three-step directions.	Demonstrate safe behavior and appropriate procedures by sequentially following two-step directions with picture cues.	Demonstrate safe behavior by following a one-step direction using objects/partial objects, tactile symbols, or pictures.
	C2-PO2. Plan a simple investigation that identifies the variables to be controlled.	Identify the variables.	Given a simple investigation, choose one variable to measure.	Through guided class discussion, name variables for a simple investigation.	Using objects/partial objects, tactile symbols, or pictures, name two vocabulary words associated with a guided investigation.
	C2-PO3. Conduct controlled investigations (e.g., related to erosion, plant life cycles, weather, magnetism) in life, physical, and earth and space sciences.	Conduct investigations using measurement tools.	Use simple tools, such as rulers, thermometers, magnifiers, and balances, to collect data.	Match customary units of measurement (e.g., weight, length, temperature, volume) to appropriate tools.	Name (using receptive or expressive language) a simple measurement tool associated with a guided investigation.
	C2-PO4. Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).	Use measurement tools.	Given a simple investigation, use measurement tools to perform multiple steps of an investigation.	Given a simple investigation, observe and collect data.	Use a simple measurement tool associated with a guided investigation.
	C2-PO5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.	Record data.	Construct a single-bar graph or line graph using organized data.	With appropriate labels, titles, and organized data provided, construct a single-bar graph or line graph.	Make a simple pictograph or tally chart from organized data.

Grade	Standard	Essence	Most Complex	More Complex	Less Complex
4	C3-PO1. Analyze data obtained in a scientific investigation to identify trends.	Use information from an investigation.	Identify trends (changes) in data obtained in an investigation.	Organize data using graphs or tables.	Organize (e.g., sequence, compare, classify) objects, events, organisms, according to various characteristics.
	C3-PO2. Formulate conclusions based upon identified trends in data.	Provide a stated outcome.	Compare results of an investigation to a prediction made prior to the investigation.	Construct reasonable explanations of identified trends in data.	Identify the conclusion of the investigation.
	C3-PO4. Determine whether the data supports the prediction for an investigation.	Determine if data supports prediction.	Record observations from a scientific inquiry using tools such as objects, pictures, checklists, or a computer log.	Using a template, record observations from a scientific inquiry using tools such as objects, pictures, checklists, or a computer log.	Make a simple pictograph or tally chart of organized data from grade-level scientific inquiry.
	C4-PO1. Communicate verbally or in writing the results of an inquiry.	Communicate results of investigations.	Communicate results of investigations verbally or in writing.	Communicate results of investigations using pictures, graphs, models, and/or words.	Communicate observations with objects/partial objects, tactile objects, pictures, models, and/or words.
	C4-PO3. Communicate with other groups or individuals to compare the results of a common investigation.	Communicate results of investigations.	Use an appropriate graphic representation (e.g., bar graph, line graph, Venn diagram, and model) of the data to communicate results of an investigation.	Show the results of an investigation using pictures or models.	Communicate the results of an investigation using objects/partial objects, tactile objects, pictures, models, and/or words.

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8	C2–PO1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.	Use safe and appropriate procedures.	Demonstrate safe behavior and appropriate procedures by using a comprehensive checklist delineating safe procedures, materials, and equipment for a science inquiry.	Demonstrate safe behavior and appropriate procedures by determining whether a specific three-step task is completed by using a checklist to ensure all of the steps were followed in the right order, with picture cues to assist.	Demonstrate safe behavior by indicating that an activity has been completed by putting the related object/partial object, tactile symbol, or picture in a location symbolizing “finished.”
	C2–PO2. Design a controlled investigation to support or reject a hypothesis.	Predict what is going to happen.	Given a grade-level investigation, choose one variable to measure.	Through guided class discussion, name variables for a grade-level investigation.	Using objects/partial objects, tactile symbols, or pictures, name two vocabulary words associated with a guided grade-level investigation.
	C2–PO3. Conduct controlled investigations to support or reject a hypothesis.	Identify tools to support the prediction.	Use scientific tools, such as balances, microscopes, and scales, to collect data.	Match customary units of measurement (e.g., weight, length, temperature, volume) to scientific tools.	Name (using receptive or expressive language) scientific measurement tools associated with a guided grade-level investigation.
	C2–PO4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, and/or micrometers).	Use measurement tools.	Given a simple investigation, use measurement tools to perform multiple steps of an investigation.	Given a simple investigation, observe and collect data.	Match customary units of measurement (e.g., weight, length, temperature, volume) to appropriate tools.

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<b>8</b>	C2–PO5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.	Record data.	Record observations from a scientific inquiry using tools such as objects, pictures, checklists, or a computer log.	Using a template, record observations from a scientific inquiry using tools such as objects, pictures, checklists, or a computer log.	Make a simple pictograph or tally chart of organized data from grade-level scientific inquiry.
	C3-PO3. Interpret data that show a variety of possible relationships between two variables, including: -positive relationship -negative relationship -no relationship	Explain results and formulate new questions.	Explain the relationship between two variables.	Given a table or graph, explain the data.	Identify the variables in an investigation.
	C4-PO1. Communicate the results of an investigation.	Communicate results of investigations.	Communicate results of investigations verbally or in writing.	Communicate results of investigations using pictures, graphs, models, and/or words.	Communicate observations with objects/partial objects, tactile objects, pictures, models, and/or words.
	C4-PO2. Choose an appropriate graphic representation for collected data: line graph, double bar graph, stem and leaf plot, histogram.	Choose the appropriate graphic representation for data.	Use an appropriate graphic representation (e.g., bar graph, line graph, Venn diagram, and model) of the data to communicate results of an investigation.	Describe the results of an investigation using pictures or models.	Communicate the results of an investigation using objects/partial objects, tactile objects, pictures, models, and/or words.

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<b>8</b>	<p>C4-PO4. Write clear, step-by-step instruction for conducting investigations or operating equipment (without the use of personal pronouns).</p> <p>C4-PO5. Communicate the results and conclusion of the investigation.</p>	<p>Write clear, step-by-step instructions.</p> <p>Explain the outcome of an investigation.</p>	<p>Write step-by-step instructions for conducting investigations.</p> <p>Communicate one result of an investigation verbally and/or in writing.</p>	<p>Using words or pictures, sequence three-step instructions for conducting investigations or operating equipment.</p> <p>Communicate the result of one step in an investigation, using pictures or models.</p>	<p>Choose one step in an investigation from a field of three illustrations or objects (two of which are unrelated to the investigation).</p> <p>Choose the illustration or object that shows the results of an investigation.</p>
<b>10</b>	<p>C2-PO1. Demonstrate safe procedures (e.g. use and care of technology, materials, and organisms) and behavior in all science inquiry.</p> <p>C2-PO5. Record observations, notes, sketches, questions, and ideas using tools such as journals, charts, graphs, and computers.</p>	<p>Demonstrate safe procedures and behavior.</p> <p>Record observations.</p>	<p>Demonstrate safe behavior and appropriate procedures by using a comprehensive checklist delineating safe procedures, materials, and equipment for a science inquiry.</p> <p>Record observations from a scientific inquiry using tools such as objects, pictures, checklists, or a computer log.</p>	<p>Demonstrate safe behavior and appropriate procedures by determining whether a specific three-step task is complete by using a checklist to ensure all of the steps were followed in the right order, with picture cues to assist.</p> <p>Using a template, record observations from a scientific inquiry using tools such as objects, pictures, checklists, or a computer log.</p>	<p>Demonstrate safe behavior by indicating that an activity has been completed by putting the related object/partial object, tactile symbol, or picture in a location symbolizing “finished.”</p> <p>Make a simple pictograph or tally chart of organized data from grade level scientific inquiry.</p>

<b>Grade</b>	<b>Standard</b>	<b>Essence</b>	<b>Most Complex</b>	<b>More Complex</b>	<b>Less Complex</b>
<b>10</b>	C3-PO1. Interpret data that show a variety of possible relationships between two variables, including: -positive relationship -negative relationship -no relationship	Explain results and formulate new questions.	Explain the relationship between two variables.	Given a table or graph, explain the data.	Identify the variables in an investigation.
	C4-PO1. For a specific investigation, choose an appropriate method for communicating the results.	Communicate results of investigations.	Communicate results of an investigation verbally or in writing.	Communicate results of an investigation using pictures, graphs, models, and/or words.	Communicate observations with objects/partial objects, tactile objects, pictures, models, and/or words.
	C4-PO2. Produce graphs that communicate data.	Use the appropriate graphic representation for data.	Given the appropriate graphic representation (e.g., bar graph, line graph, Venn diagram, and model), display data to communicate results of an investigation.	Describe the results of an investigation using pictures or models.	Communicate the results of an investigation using objects/partial objects, tactile objects, pictures, models, and/or words.
	C4-PO3. Communicate results clearly and logically.	Explain the outcome of an investigation.	Communicate one result of an investigation verbally or in writing.	Communicate the results of one step in an investigation, using pictures or models.	Choose the illustration or object that shows the results of an investigation.

**Science Strand 2  
History and Nature of Science  
Expanded Benchmarks**

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**Students at these standards levels know and are able to do the following by the end of the school year:**

<b>Grade</b>	<b>Standard</b>	<b>Essence</b>	<b>Most Complex</b>	<b>More Complex</b>	<b>Less Complex</b>
<b>4</b>	C1-PO2. Describe science-related career opportunities.	Identify science-related careers.	Compare two science-related career opportunities.	Explore two science-related career opportunities	Identify the healthcare workers (e.g. physical therapists, occupational therapists, and speech therapists) who work with me, their roles, and the tools they use to help me to be more independent.
<b>8</b>	C1-PO4. Evaluate career opportunities related to life and physical sciences.	Evaluate careers.	Compare employment requirements related to two life and physical sciences.	Explore skills and requirements that relate to two science careers.	Identify personal interests that relate to science (interest inventory).

**Science Strand 3**  
**Science in Personal and Social Perspectives**  
**Expanded Benchmarks**

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**Students at these standards levels know and are able to do the following by the end of the school year:**

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<b>4</b>	C2-PO1. Describe how science and technology (e.g., computers, air conditioning, and medicine) have improved the lives of many people.	Impact of science on lives.	Given two scientific inventions (e.g., computers, air conditioning, medicines) describe how they have improved lives.	Given a simple problem, find a solution.	Identify simple tools and their uses that make tasks easier or more accessible.
<b>8</b>	C2-PO2. Compare solutions to best address an identified need or problem.	Identify best solution.	Compare solutions based on cost, benefits, and risks as it relates to the listed problems. <ul style="list-style-type: none"> <li>• Clogged drain</li> <li>• Household pests</li> <li>• Conservation issues (water leaks, energy consumption, fans, light bulbs, air conditioner)</li> </ul>	Identify solutions to best address the following home safety and maintenance problems: <ul style="list-style-type: none"> <li>• Clogged drain</li> <li>• Household pests</li> <li>• Conservation issues (water leaks, energy consumption, fans, light bulbs, air conditioner)</li> </ul>	Find a solution to one of the following problems: <ul style="list-style-type: none"> <li>• Clogged drain</li> <li>• Household pests</li> <li>• Conservation issues (water leaks, energy consumption, fans, light bulbs, air conditioner)</li> </ul>
<b>10</b>	C2-PO4. Analyze the use of renewable and nonrenewable resources in Arizona: water, land, soil, minerals, and air.	Investigate the uses of resources.	Explain the impact of loss of resources in the community.	Describe how resources in the community are used.	Given two choices, indicate the picture that reflects the best usable resource (e.g., clean or murky water for drinking or bathing).



**Science Strand 4  
Life Science  
Expanded Benchmarks**

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**Students at these standards levels know and are able to do the following by the end of the school year:**

<b>Grade</b>	<b>Standard</b>	<b>Essence</b>	<b>Most Complex</b>	<b>More Complex</b>	<b>Less Complex</b>
<b>4</b>	C1-PO1. Compare structures in plants (e.g., roots, stems, leaves, flowers) and animals (e.g., muscles, bones, nerves) that serve different functions in growth and survival.	Identify the parts of plants and animals and their function.	Compare the parts of plants and their functions to the parts of animals and their functions.	Identify three parts of plants or animals and describe the function of each.	Distinguish between pictures/objects of living and nonliving things.
	C1-PO2. Classify animals by identifiable group characteristics; <ul style="list-style-type: none"> <li>• Vertebrates- mammals, birds, fish, reptiles, and amphibians</li> <li>• Invertebrates- insects, arachnids</li> </ul>	Classify animals.	Classify animals by two group characteristics (e.g., scales, feathers, fur; number of legs; size; camouflage colors; walk, fly, swim).	Sort pictures/objects of animals into groups of same or different characteristics.	Match pictures/objects of like animals.
	C3-PO1. Describe ways various resources (e.g., air, water, plants, animals, soil) are utilized to meet the needs of a population.	Identify resources needed for survival.	Describe various resources (e.g. air, water, soil) that are utilized to meet the needs of a population.	Recognize that plants and animals have basic needs (e.g. food, water, air, shelter, and light) to survive.	Identify the plants and animals that exist in the local environment.
	C3-PO3. Analyze the effect that limited resources (e.g., natural gas, minerals) may have on an environment.	Understand effect of limited resources on an environment	Describe the effect that limited resources may have on an environment.	Describe how plants and animals within a habitat are dependent on each other.	Describe various plant and animal habitats.

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<b>8</b>	C2-PO2. Explain the basic principles of heredity using the human examples of: eye color, widow's peak, and blood type.	Explain the basic principles of heredity.	Compare personal traits with family traits.	Choose two personal traits and identify which family member has that same trait.	Identify personal traits.
<b>10</b>	C3-PO1. Identify the relationships among organisms within populations, communities, ecosystems, and biomes.	Analyze the relationships among various organisms and their environment.	Describe the relationship between organisms living in the same environment.	Describe various organisms' habitats.	Match organisms to their habitats.

**Science Strand 6  
Earth and Space Science  
Expanded Benchmarks**

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<b>Grade</b>	<b>Standard</b>	<b>Essence</b>	<b>Most Complex</b>	<b>More Complex</b>	<b>Less Complex</b>
<b>4</b>	C3-PO1. Identify the sources of water within an environment (e.g., ground water, surface water, atmospheric water, glaciers).	Identify water sources.	Identify the sources of water in different climates.	Identify the sources of water in local climate.	Identify a source of water in local climate.
	C3-PO2. Describe the distribution of water on the Earth's surface.	Distribution of bodies of water.	Describe the different bodies of water on the Earth's surface.	Describe the different bodies of water in regional or local area.	Identify a body of water in local area.
	C3-PO3. Differentiate between weather and climate as they relate to the southwestern United States.	Differentiate between weather and climate.	Describe the weather that occurs in different climates in the southwestern United States.	Describe weather conditions in the southwestern United States (e.g., temperature, precipitation).	Identify a current weather condition (e.g., sunny, hot, rainy, windy).
	C3-PO4. Measure changes in weather (e.g., precipitation, wind speed, barometric pressure).	Measure changes in weather.	Measure and record changes in the weather.	Measure a change in the weather.	Measure temperature.
	C3-PO5. Interpret the symbols on a weather map or chart to identify the following: <ul style="list-style-type: none"> <li>• temperatures</li> <li>• fronts</li> <li>• precipitation</li> </ul>	Understand weather symbols.	Interpret two of the following symbols on a weather map or chart: <ul style="list-style-type: none"> <li>• temperatures</li> <li>• fronts</li> <li>• precipitation</li> </ul>	Identify a weather symbol on a weather map or chart.	Match a weather symbol to daily weather.

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<b>4</b>	C3-PO6. Compare weather conditions in various locations (e.g., regions of Arizona, various U.S. cities, coastal vs. interior geographical regions).	Compare weather conditions.	Describe weather conditions in various locations (e.g., regions of Arizona, various U. S. cities, coastal vs. interior geographical regions).	Explain how the weather affects daily activities.	Give an example of how the current weather affects the outdoor activity.